AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A battery state diagnosing device comprising:

a load applying section for applying a load to a battery;

a measuring section measuring input and output characteristics of the battery in response to the applied load; and

a diagnosing section diagnosing a state of the battery by plugging applying a result of the measurement into to a mathematical expression obtained by a system identification method, wherein

said battery state diagnosing device applyng applies the load to the battery using as a current load.

2. (Original) The battery state diagnosing device as set forth in claim 1, wherein:

the measured output characteristic is a terminal voltage of the battery; and

when diagnosing the battery by system identification, an electromotive force component of a fluctuating terminal voltage of the battery is

2

removed as a bias, and a slight voltage fluctuation after the electromotive force

component has been removed is amplified and used for the diagnosis by the system

identification.

3.   (Original) The battery state diagnosing device as set forth in claim

1, wherein:

the measured output characteristic is a terminal voltage of the

battery; and

when diagnosing the battery by system identification, a fluctuating

terminal voltage of the battery is separated into a perpendicular component which

derives from a serial resistance of the battery, and a component representing CR

dynamics;

the perpendicular component is removed from the terminal voltage;

and

a slight voltage fluctuation after the perpendicular component has

been removed is amplified and used for the diagnosis by the system identification.

4.   (Original) The battery state diagnosing device as set forth in claim

3, wherein:

in order to remove the perpendicular component from the terminal

voltage, a voltage value at a rise of a voltage pulse representing the electromotive

force component of the battery is calculated from a voltage wave form of the

3

terminal voltage, and the calculated value of the voltage pulse is subtracted from

the terminal voltage.

5.   (Currently Amended) A battery state diagnosing device comprising:

a load applying section for applying a current to a battery;,

a measuring section measuring input and output characteristics of

the battery in response to the applied load;, and

a diagnosing section diagnosing a state of the battery by plugging

applying a result of the measurement into to a mathematical expression obtained

by a system identification method, wherein

the load applying section applies a current to the battery being a fuel

cell that is when the battery is not supplied with fuel. and the battery being

supplied with a current from a voltage source.

6.   (Currently Amended) A battery state diagnosing device for

applying load to a battery, measuring input and output characteristics of the

battery, and diagnosing a state of the battery by plugging applying a result of the

measurement into to a mathematical expression obtained by a system identification

method, said battery state diagnosing device comprising:

a circuit section for constituting a closed circuit by serially

connecting the battery to a current load when diagnosing the battery;

a measuring section, connected to the circuit section, for measuring

a terminal voltage of the battery and a current flowing in the circuit section; and

4

a diagnosing section for diagnosing, by the system identification

method, a state of the battery based on a result of the measurement by the

measuring section.

7.   (Currently Amended) A battery state diagnosing device for

applying a current to a battery, measuring input and output characteristics of the

battery, and diagnosing a state of the battery by ~~plugging~~ applying a result of the

measurement ~~into~~ to a mathematical expression obtained by a system identification

method, the battery being a fuel cell that is not supplied with fuel,

said battery state diagnosing device comprising:

a circuit section for constituting a closed circuit by serially

connecting the battery to a voltage source when diagnosing the battery;

a measuring section, connected to the circuit section, for measuring

a terminal voltage of the battery and a current flowing in the circuit section; and

a diagnosing section for diagnosing, by the system identification

method, a state of the battery based on a result of the measurement by the

measuring section.

8.   (Currently Amended) A battery state diagnosing method

comprising the steps of:

~~for~~ applying a load to a battery~~;~~;

measuring input and output characteristics of the battery in response

to the applied load;~~;~~ and

5

diagnosing a state of the battery by ~~plugging~~ applying a result of <u>the</u>

measurement ~~into~~ <u>to</u> a mathematical expression obtained by a system identification

method, <u>wherein</u>

said ~~method measuring input and output characteristics of the~~

~~battery by~~ <u>step of applying a load to the battery</u> serially <u>connects</u> ~~connecting~~ the

battery to a current load.

9. (Original) The battery state diagnosing method as set forth in claim

8, wherein:

the measured output characteristic is a terminal voltage of the

battery; and

when diagnosing the battery by system identification, an

electromotive force component of a fluctuating terminal voltage of the battery is

removed as a bias, and a slight voltage fluctuation after the electromotive force

component has been removed is amplified and used for the diagnosis by the system

identification.

10. (Original) The battery state diagnosing method as set forth in claim

8, wherein:

the measured output characteristic is a terminal voltage of the

battery; and

when diagnosing the battery by system identification, a fluctuating

terminal voltage of the battery is separated into a perpendicular component which

6

947378

derives from a serial resistance of the battery, and a component representing CR

dynamics;

the perpendicular component is removed from the terminal voltage;

and

a slight voltage fluctuation after the perpendicular component has

been removed is amplified and used for the diagnosis by the system identification.

11.   (Original) The battery state diagnosing method as set forth in claim

10, wherein:

in order to remove the perpendicular component from the terminal

voltage, a voltage value at a rise of a voltage pulse representing the electromotive

force component of the battery is calculated from a voltage wave form of the

terminal voltage, and the calculated value of the voltage pulse is subtracted from

the terminal voltage.

12.   (Currently Amended) A battery state diagnosing method comprising

the steps of:

~~for~~ applying a current to a battery~~;~~,

measuring input and output characteristics of the battery in response

to the applied current~~;~~, and

diagnosing a state of the battery by ~~plugging~~ applying a result of the

measurement ~~into~~ to a mathematical expression obtained by a system identification

method, wherein

7

the current is applied to the battery when the battery ~~being a fuel cell that~~ is not supplied with fuel, and

said step of applying a current ~~said method measuring input and output characteristics of the battery by~~ serially ~~connecting~~ connects the battery to a voltage source.

947378